ANCHOR QEA

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January 5, 2011

Sean Sheldrake
Project Coordinator
USEPA, Region 10
1200 Sixth Avenue, M/S ECL-111
Seattle, Washington 98101

Re: Progress Report for December 2010
Removal Action, Portland Harbor Superfund Site, NW Natural "Gasco" Facility

Project Number: 000029-02.26

Dear Mr. Sheldrake:

This monthly status report provides information required by the Removal Action Administrative Order on Consent (AOC) for the Portland Harbor Superfund Site, NW Natural "Gasco" Facility, in Oregon. EPA provided NW Natural with the Notice of Completion of Work under the AOC on December 14, 2010 so this is the final monthly status report that will be submitted pursuant to the AOC.

1. ACTIONS TAKEN IN THIS MONTH

The following actions and correspondences occurred in this month:

- Submitted the November 2010 monthly progress report.
- Conducted the monthly visual monitoring of the pilot cap area.
- Receipt of EPA's Notice of Completion of Work under the AOC dated December 14, 2010. The Notice of Completion of Work identified the following list of post-removal site controls related to the AOC have been incorporated into the 2009 Administrative Settlement Agreement and Order on Consent for Removal Action (Order; docket number 10-2009-0255) entered into by NW Natural and Siltronic Corporation:
  - One additional bathymetric survey of the pilot cap area as part of a comprehensive bathymetric survey to be performed to support the final sediment remedy design for the overall site.

- Monthly visual monitoring (single day per month) of the shoreline area in the direct vicinity of the pilot cap to identify any areas of sheen or product release. The monthly visual monitoring shall continue until such time as the pilot cap area is addressed as part of the overall site remedy.
- If significant and/or unexpected river velocities occur, EPA may request additional activities to monitor the integrity and stability of the pilot cap, if necessary.
- Diver inspections on an annual basis or as agreed to with EPA for physical cap inspection for integrity.

2. RESULTS OF SAMPLING, TESTS, AND OTHER DATA RECEIVED

The following results were received during this month:

- The visual monitoring survey did not identify any areas of sheen production, areas of erosion, or any other adverse issues within the removal action area.
- Copies of the visual monitoring survey reports extending from January to December 2010 are attached. All previous survey reports were submitted with previous annual monitoring reports completed under the AOC.

3. SCHEDULE FOR THE NEXT MONTH

No future work will be completed under the AOC beyond payment of future response costs incurred under the AOC and record retention.

4. PROBLEMS ENCOUNTERED, ANTICIPATED DELAYS, AND SOLUTIONS

No problems were encountered during this month.

If you have any questions, please contact Bob Wyatt at 503.226.4211, ext. 5425.

Sincerely,

Ryan Barth

Ryan Barth, P.E.
Anchor QEA, LLC

Cc: Matt McClincy, Oregon Department of Environmental Quality (ODEQ)
Dana Bayuk, ODEQ
Bob Wyatt, NW Natural
Patty Dost, Pearl Legal Group PC
Carl Stivers, Anchor QEA, LLC

Visual Observations Log Form

Date	January 21, 2010	**Project Number:**	000029-02 BG-21 Task 4
Location:	NW Natural "Gasco" Site		
Project Name:	NW Natural – Gasco		
Monitoring Period:	Monthly(Year 4) – January 2010		
Time Observations Started:	January 21, 2010 @ 08:00	**Time Observation Concluded:**	January 21, 2010 @ 16:00
Weather Conditions:	Partly cloudy, 54 degrees Fahrenheit, 0-7 knot winds from southeast during pictures		
Wave Action Observations:	Light wave action (0.0-0.1 feet in height)		
Photographs Taken:	(Yes)	No	

Tidal Conditions:	River level elevation on 01/21/10 ranged from 5.03 to 7.03 feet; and approximately 5.63 feet at 14:30 when photos were taken (Datum: Morrison Gage Height)
Observations of Erosion/Deposition:	No erosion/deposition is evident along the shoreline. A 2-foot strip of organo-clay mat material was visible beneath the water surface near the shoreline at the upriver extent of the cap area (Photo 1).
Observations of Long-term Controls (i.e., oil booms, organo-clay mat, etc.)	During the Monitoring event, the Fuel and Marine Marketing (FAMM) oil boom was positioned across the cap area, between the upriver corner of the ship dock and the wooden dolphin (near the upriver extent of the site and near the Siltronic Corporation outfall). Buoys that identify the cap area to mariners were in place as installed. The position of the FAMM oil boom, warning buoys and a general overview of the site shoreline are shown in Photo 2.

Other Comments:
No sheen was observed in or around the cap area. Photo 3 shows the water surface and shoreline immediately downriver of the sediment cap. A ship (the Osprey Arrow) was docked along at the FAMM pier.

Recorded by: Douglas Laffoon

Photo 1 — *Exposed organo-clay mat at near upriver extent of sediment cap (01/21/10):*

Photo 2 — *FAMM oil boom and mariner warning buoys in place across pilot cap area (01/21/10):*

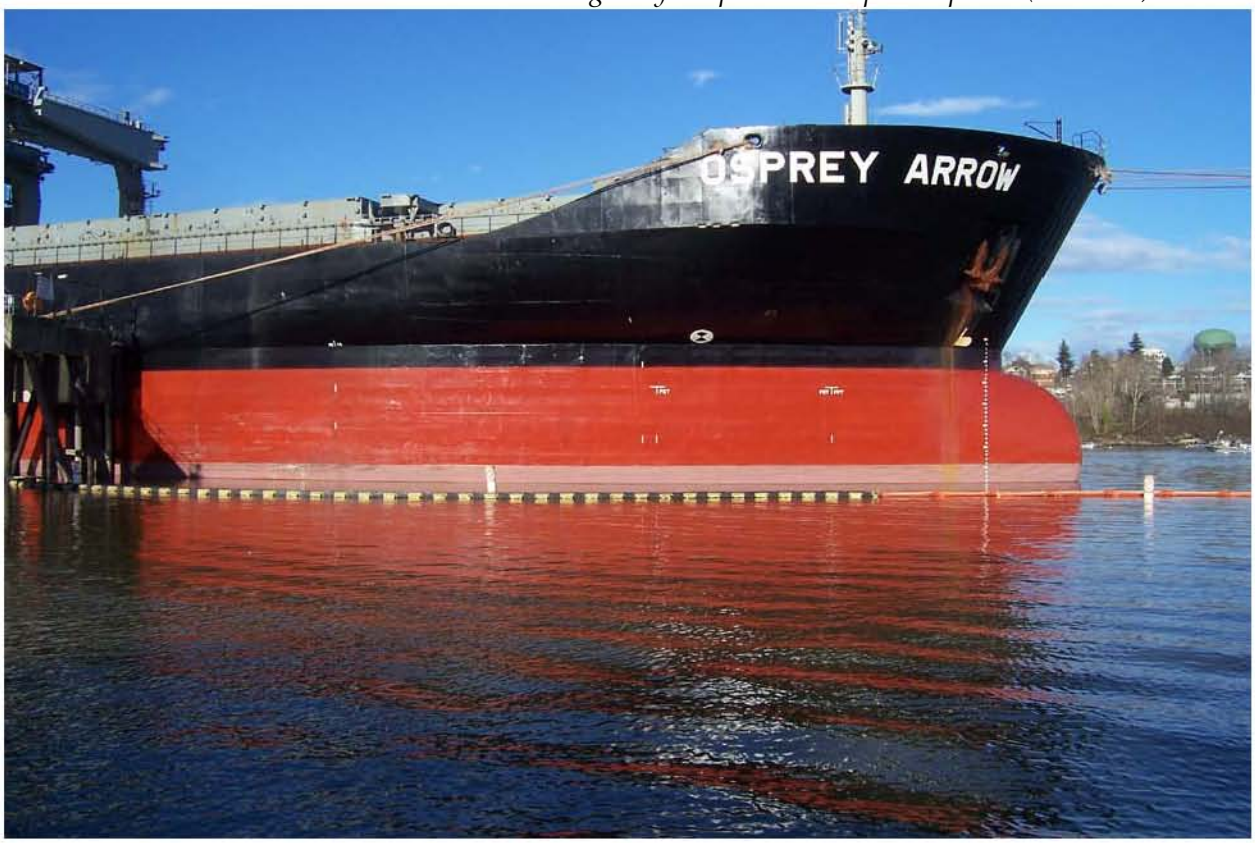


Photo 3 — *Conditions immediately downriver of cap area (01/21/10):*

Visual Observations Log Form

Date	February 25, 2010	**Project Number:**	000029-02 BG-21 Task 4
Location:	NW Natural "Gasco" Site		
Project Name:	NW Natural – Gasco		
Monitoring Period:	Monthly(Year 4) – February 2010		
Time Observations Started:	February 25, 2010 @ 14:00	**Time Observation Concluded:**	February 25, 2010 @ 15:30
Weather Conditions:	Cloudy, 52-57 degrees Fahrenheit, 0-3 knot winds from northwest		
Wave Action Observations:	Light wave action (0.0-0.3 feet in height)		
Photographs Taken:	(Yes)	No	

Tidal Conditions:	Willamette River level on 02/25/10 ranged from 2.56 to 5.99 feet. The Willamette River level during photos is approximately 5.88 feet at 14:45 (River Level Datum: Morrison Gage Height)
Observations of Erosion/Deposition:	No erosion/deposition is evident along the shoreline. Three segments of organo-clay mat material are visible beneath the water surface, one near the shoreline at the upriver extent of the cap area and the other two approximately 20 feet off the shoreline. (Photo 1).
Observations of Long-term Controls (i.e., oil booms, organo-clay mat, etc.)	The Fuel and Marine Marketing (FAMM) containment boom is positioned across the cap area, between the upriver corner of the ship dock and the wooden dolphin (near the upriver extent of the site and near the Siltronic Corporation outfall). Buoys that identify the cap area to mariners are in place as installed. The position of the FAMM oil boom, warning buoys and a general overview of the site shoreline are shown in Photo 2.

Other Comments:
No sheen is evident in or around the cap area. Photo 3 shows the water surface and shoreline immediately downriver of the sediment cap. A barge is docked at the riverward face of the FAMM pier.

Recorded by: Douglas Laffoon

Photo 1 — *Exposed organo-clay mat at near upriver extent of sediment cap (02/25/10):*

Photo 2 — *FAMM oil boom and mariner warning buoys in place across pilot cap area (02/25/10):*

Photo 3 — *Conditions immediately downriver of cap area (02/25/10):*

Visual Observations Log Form

Date	March 18, 2010	**Project Number:**	000029-02 BG-21 Task 4
Location:	NW Natural Gasco Site, 7900 NW St. Helens Road, Portland, Oregon		
Project Name:	NW Natural – Gasco		
Monitoring Period:	Monthly(Year 4) – March 2010		
Time Observations Started:	March 18, 2010 @ 15:00	**Time Observation Concluded:**	March 18, 2010 @ 16:30
Weather Conditions:	Clear, 60-64 degrees Fahrenheit, 5-10 knot winds from northwest		
Wave Action Observations:	Moderate wave action (0.5-1.0 feet in height)		
Photographs Taken:	(Yes)	No	

Tidal Conditions:	Willamette River level on 3/18/10 ranged from 2.05 to 5.17 feet. The Willamette River level during photos is approximately 2.72 feet at 16:00 (River Level Datum: Morrison Gage Height)
Observations of Erosion/Deposition:	No erosion/deposition is evident along the shoreline. Three segments of organo-clay mat material are visible beneath the water surface. (Photo 1).
Observations of Long-term Controls (i.e., oil booms, organo-clay mat, etc.)	The Fuel and Marine Marketing (FAMM) containment boom is positioned across the cap area between the upriver corner of the ship dock and the wooden dolphin (near the upriver extent of the site and near the Siltronic Corporation outfall). Buoys that identify the cap area to mariners are in place as installed. The position of the FAMM oil boom, warning buoys and a general overview of the site shoreline are shown in Photo 2.

Other Comments:
No sheen is evident in or around the cap vicinity. Photo 3 shows the water surface and shoreline immediately downriver of the sediment cap.

Recorded by: Douglas Laffoon

Photo 1 — *Exposed organo-clay at shoreward extent of sediment cap (03/18/10):*

Photo 2 — *FAMM oil boom and warning buoys in place across pilot cap area (3/18/10):*

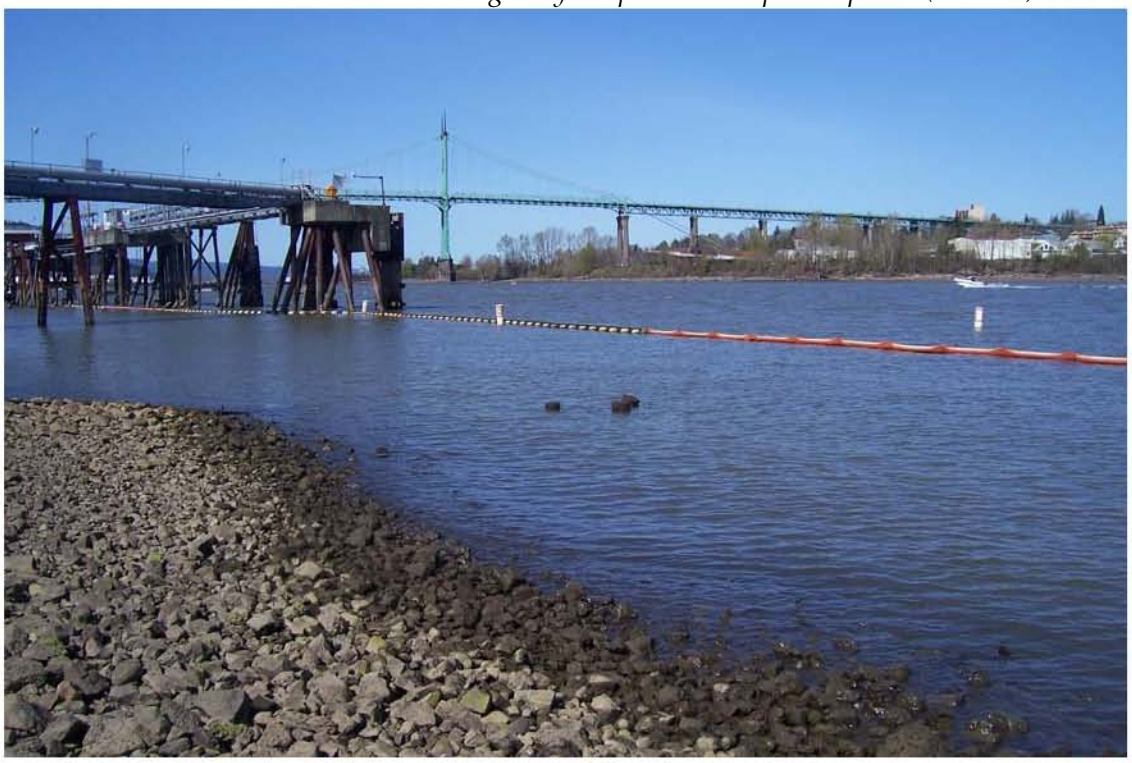
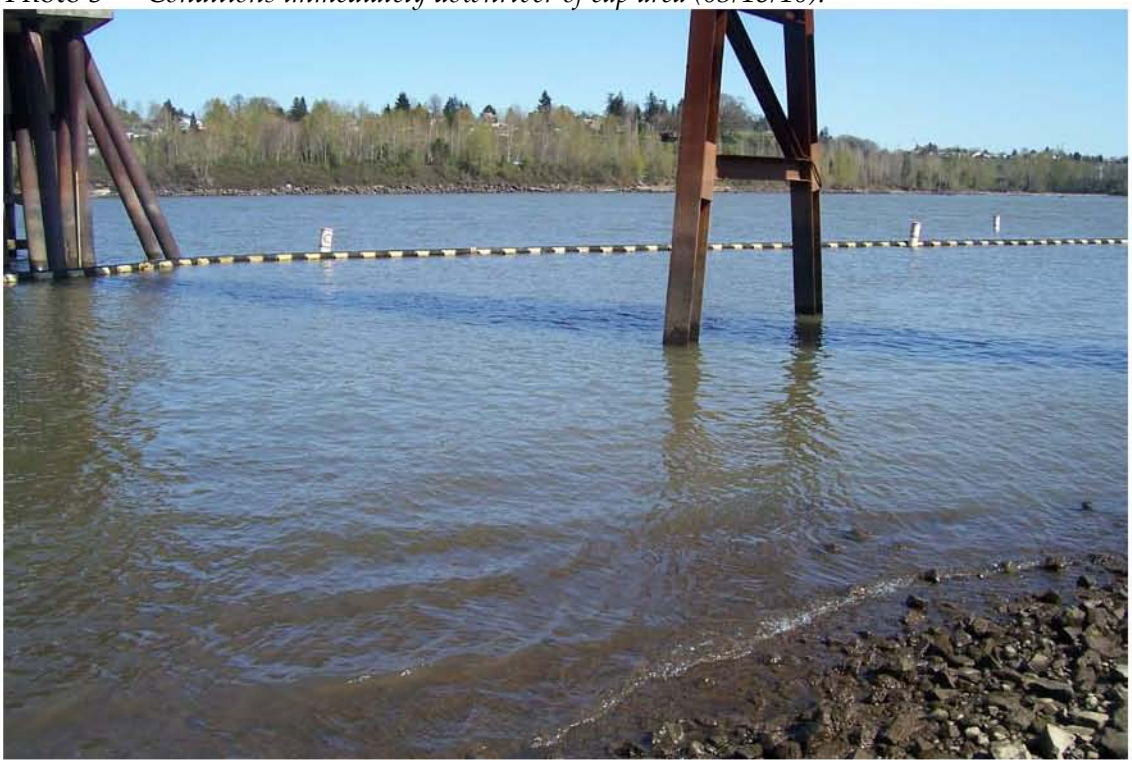


Photo 3 — *Conditions immediately downriver of cap area (03/18/10):*



Visual Observations Log Form

Date	April 28, 2010	**Project Number:**	000029-02 BG-21 Task 4
Location:	NW Natural Gasco Site, 7900 NW St. Helens Road, Portland, Oregon		
Project Name:	NW Natural – Gasco		
Monitoring Period:	Monthly(Year 4) – April 2010		
Time Observations Started:	April 28, 2010 @ 12:45	**Time Observation Concluded:**	April 28, 2010 @ 13:45
Weather Conditions:	Cloudy, intermittent rain showers, 50-55 degrees Fahrenheit, 5 knot wind from southeast		
Wave Action Observations:	Light wave action (0.1- 0.3 feet in height)		
Photographs Taken:	(Yes)	No	

Tidal Conditions:	Willamette River level on 4/28/10 ranged from 5.38 to 8.16 feet. The Willamette River level during photos is approximately 5.84 feet (measured at 13:00, Vertical Datum: Morrison Gage Height)
Observations of Erosion/Deposition:	No erosion/deposition is evident along the shoreline of the capped area. Two segments of organo-clay mat material are visible beneath the water surface (Photo 1).
Observations of Long-term Controls (i.e., oil booms, organo-clay mat, etc.)	The Fuel and Marine Marketing (FAMM) containment boom is positioned across the cap area between the upriver corner of the ship dock and the wooden dolphin (near the upriver extent of the site and near the Siltronic Corporation outfall). Buoys that identify the cap area to mariners are in place as installed. The position of the FAMM oil boom, warning buoys and a general overview of the site shoreline are shown in Photo 2.

Other Comments:
No sheen is evident in or around the cap vicinity. Photo 3 shows the water surface and shoreline immediately downriver of the sediment cap.

Recorded by: Douglas Laffoon

Photo 1 — *Exposed organo-clay at shoreward extent of sediment cap (04/28/10):*

Photo 2 — *FAMM oil boom and mariner warning buoys in place across pilot cap area (04/28/10):*

Photo 3 — *Conditions immediately downriver of cap area (04/28/10):*

Visual Observations Log Form

Date	May 17, 2010	**Project Number:**	000029-02 BG-21 Task 4
Location:	NW Natural "Gasco" Site		
Project Name:	NW Natural – Gasco		
Monitoring Period:	Monthly(Year 4) – May 2010		
Time Observations Started:	May 17, 2010 @ 13:30	**Time Observation Concluded:**	May 17, 2010 @ 15:30
Weather Conditions:	Clear, 72 degrees Fahrenheit, 0-3 knot winds from northwest		
Wave Action Observations:	Light wave action (0.1-0.3 feet in height)		
Photographs Taken:	(Yes)	No	

Tidal Conditions:	Willamette River level on 05/17/10 ranged from 4.33 to 6.88 feet. The Willamette River level during photos is approximately 5.05 feet measured at 14:30 (River Level Datum: Morrison Gage Height)
Observations of Erosion/Deposition:	No erosion/deposition is evident along the shoreline. Three sections of organo-clay mat material are visible beneath the water surface. One exposed section of organo-clay mat is visible at the upriver extent of the cap area extending from 2 feet to 10 feet channelward of the water's edge. Two exposed sections of exposed organo-clay mat are visible approximately 1-2 feet channelward of the water's edge, one near the midpoint of the cap area and the second near its downriver extent. (Photo 1).
Observations of Long-term Controls (i.e., oil booms, organo-clay mat, etc.)	The Fuel and Marine Marketing (FAMM) containment boom is positioned across the cap area, between the upriver corner of the ship dock and the wooden dolphin (near the upriver extent of the site and near the Siltronic Corporation outfall). Buoys that identify the cap area to mariners are in place as installed. The position of the FAMM oil boom, warning buoys and a general overview of the site shoreline are shown in Photo 2.

Other Comments:
No sheen is evident in or around the cap area. Photo 3 shows the water surface and shoreline immediately downriver of the sediment cap. A barge is docked at the riverward face of the ship dock.

Recorded by: Douglas Laffoon

Photo 1 — *Exposed section of organo-clay mat at the upriver extent of sediment cap (05/17/10):*

Photo 2 — *FAMM oil boom and mariner warning buoys in place across pilot cap area (05/17/10):*

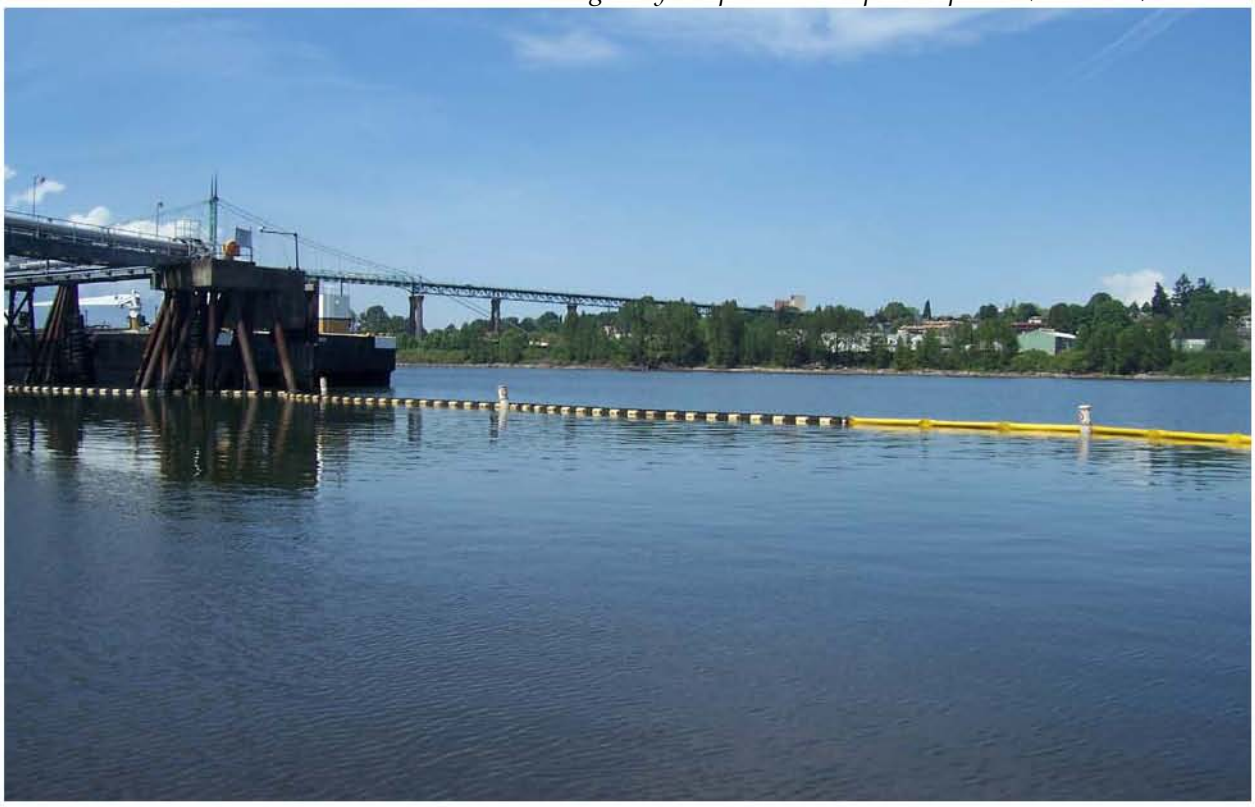


Photo 3 — *Conditions immediately downriver of cap area (05/17/10):*

Visual Observations Log Form

Date	June 17, 2010	**Project Number:**	000029-02 BG-21 Task 4
Location:	NW Natural "Gasco" Site		
Project Name:	NW Natural – Gasco		
Monitoring Period:	Monthly(Year 4) – June 2010		
Time Observations Started:	June 17, 2010 @ 11:00	**Time Observation Concluded:**	June 17, 2010 @ 14:00
Weather Conditions:	Cloudy, mid 60s degrees Fahrenheit, 3-5 knot winds from the north		
Wave Action Observations:	Light wave action (0.2-0.4 feet in height)		
Photographs Taken:	(Yes)	No	

Tidal Conditions:	Willamette River level on 06/17/10 ranged from 10.68 to 11.19 feet. The Willamette River level during photos is approximately 11.04 feet measured at 11:15 am (River Level Datum: Morrison Gage Height)
Observations of Erosion/Deposition:	No erosion/deposition is evident along the shoreline. Due to high river water levels, the exposed organo- clay mat material observed in preceding events was not visible (Photo 1).
Observations of Long-term Controls (i.e., oil booms, organo-clay mat, etc.)	The Fuel and Marine Marketing (FAMM) containment boom is positioned across the cap area, between the upriver corner of the ship dock and the wooden dolphin (near the upriver extent of the site and near the Siltronic Corporation outfall). Buoys that identify the cap area to mariners are in place as installed. The position of the FAMM oil boom, warning buoys and a general overview of the site shoreline are shown in Photo 2.

Other Comments:
No sheen is evident in or around the cap area. Photo 3 shows the water surface and shoreline immediately downriver of the sediment cap. A barge is docked at the riverward face of the ship dock.

Recorded by: Douglas Laffoon

Photo 1 — *High river level shown above the extent of sediment cap (06/17/10):*

Photo 2 — *FAMM oil boom and mariner warning buoys in place across pilot cap area (06/17/10):*

Photo 3 — *Conditions immediately downriver of cap area (06/17/10):*

Visual Observations Log Form

Date	July 16, 2010	**Project Number:**	000029-02 BG-21 Task 4
Location:	NW Natural "Gasco" Site		
Project Name:	NW Natural – Gasco		
Monitoring Period:	Monthly(Year 4) – July 2010		
Time Observations Started:	July 16, 2010 @ 12:30	**Time Observation Concluded:**	July 16, 2010 @ 14:00
Weather Conditions:	Clear, 75 degrees Fahrenheit, 0-3 knot winds from northwest		
Wave Action Observations:	Light wave action (0.0-0.3 feet in height)		
Photographs Taken:	(Yes)	No	

Tidal Conditions:	Willamette River level on 07/16/10 ranged from 3.72 to 6.60 feet. The Willamette River level during photos is approximately 4.98 feet measured at 13:00 (River Level Datum: Morrison Gage Height).
Observations of Erosion/Deposition:	No erosion/deposition is evident along the shoreline. Three sections of organo-clay mat material are visible beneath the water surface. One exposed section of organo-clay mat is visible at the upriver extent of the cap area extending from 2 feet to 10 feet channelward of the water's edge. Two exposed sections of exposed organo-clay mat are visible approximately 1-2 feet channelward of the water's edge, one near the midpoint of the cap area and the second near its downriver extent. (Photo 1).
Observations of Long-term Controls (i.e., oil booms, organo-clay mat, etc.)	The Fuel and Marine Marketing (FAMM) containment boom is positioned across the cap area, between the upriver corner of the ship dock and the wooden dolphin (near the upriver extent of the site and near the Siltronic Corporation outfall). Buoys that identify the cap area to mariners are in place as installed. The position of the FAMM oil boom, warning buoys and a general overview of the site shoreline are shown in Photo 2.

Other Comments:
No sheen is evident at or near the cap area. Photo 3 shows the water surface and shoreline immediately downriver of the sediment cap.

Recorded by: Douglas Laffoon

Photo 1 — *Exposed section of organo-clay mat at the shoreline near mid-section of cap (07/16/10):*

Photo 2 — *FAMM oil boom and mariner warning buoys in place across pilot cap area (07/16/10):*

Photo 3 — *Conditions immediately downriver of cap area (07/16/10):*

Visual Observations Log Form

Date	August 17, 2010	**Project Number:**	000029-02 BG-21 Task 4
Location:	NW Natural "Gasco" Site		
Project Name:	NW Natural – Gasco		
Monitoring Period:	Monthly(Year 4) – August 2010		
Time Observations Started:	August 17, 2010 @ 15:00	**Time Observation Concluded:**	August 17, 2010, 16:30
Weather Conditions:	Mostly Cloudy, Humid, 90^{o} Fahrenheit, 3-5 knot wind from the north		
Wave Action Observations:	Light wave action (0.2 – 0.5 feet in height)		
Photographs Taken:	(Yes)	No	

Tidal Conditions:	Willamette River level on 08/17/10 ranged from 1.66 to 5.17 feet. The Willamette River level during photos is approximately 2.43 feet measured at 15:30 (River Level Datum: Morrison Gage Height).
Observations of Erosion/Deposition:	No erosion/deposition is evident along the shoreline. Three sections of organo-clay mat material are on the beach along the shoreline. One exposed section of organo-clay mat is visible at the upriver extent of the cap area extending from the river's shoreline to 10 feet out of the water. Two exposed sections of exposed organo-clay mat are visible near the midpoint of the cap area, one 3 foot in length, the other about 18 inches. The last exposed mat is near the downriver side, along the shoreline, approximately 30 feet long. (Photo 1).
Observations of Long-term Controls (i.e., oil booms, organo-clay mat, etc.)	The Fuel and Marine Marketing (FAMM) containment boom is positioned across the cap area, between the upriver corner of the ship dock and the wooden dolphin (near the upriver extent of the site and near the Siltronic Corporation outfall). Buoys that identify the cap area to mariners are in place as installed. The position of the FAMM oil boom, warning buoys and a general overview of the site shoreline are shown in Photo 2.

Other Comments:
No sheen is evident in or around the cap area. Photo 3 shows the water surface and shoreline immediately downriver of the sediment cap.

Recorded by: Douglas Laffoon

Photo 1 — *Exposed section of organo-clay mat at the shoreline near downstream end of cap (08/17/10):*

Photo 2 — *FAMM oil boom and mariner warning buoys in place across pilot cap area (08/17/10):*

Photo 3 — *Conditions immediately downriver of cap area (08/17/10):*

Visual Observations Log Form

Date	September 21, 2010	**Project Number:**	000029-02 BG-21 Task 4
Location:	NW Natural "Gasco" Site		
Project Name:	NW Natural – Gasco		
Monitoring Period:	Monthly(Year 4) – September 2010		
Time Observations Started:	Sept. 21, 2010 @ 13:30	**Time Observation Concluded:**	Sept. 21, 2010 @ 14:30
Weather Conditions:	Partly Cloudy, 60s^{o} Fahrenheit, 0-3 knot winds from the north		
Wave Action Observations:	Light wave action (0.2 – 0.4 feet in height)		
Photographs Taken:	(Yes)	No	

Tidal Conditions:	Willamette River level on 09/21/10 ranged from 0.67 to 4.19 feet. The Willamette River level during photos is approximately 0.76 feet measured at 14:00 (River Level Datum: Morrison Gage Height).
Observations of Erosion/Deposition:	No erosion/deposition is evident along the shoreline. All visible organo-clay mat material segments are out of the water. One exposed section of organo-clay mat is visible at the upriver extent of the cap area is approximately 15 feet long and 2 feet from the water's edge. Two exposed sections of exposed organo-clay mat are visible near the midpoint, head of the cap area, one 4 foot in length, the other about 2 feet. The last exposed mat is near the downriver side, 4 feet from the shoreline, approximately 30 feet long. (Photo 1).
Observations of Long-term Controls (i.e., oil booms, organo-clay mat, etc.)	The Fuel and Marine Marketing (FAMM) containment boom is positioned across the cap area, between the upriver corner of the ship dock and the wooden dolphin (near the upriver extent of the site and near the Siltronic Corporation outfall). Buoys that identify the cap area to mariners are in place as installed. The position of the FAMM oil boom, warning buoys and a general overview of the site shoreline are shown in Photo 2.

Other Comments:
No sheen is evident in or around the cap area. Photo 3 shows the water surface and shoreline immediately downriver of the sediment cap.

Recorded by: Douglas Laffoon

Photo 1 — *Exposed section of organo-clay mat 4 feet from the shoreline near downriver end of cap (09/21/10):*

Photo 2 — *FAMM oil boom and mariner-warning buoys in place across pilot cap area (09/21/10):*

Photo 3 — *Conditions immediately downriver of cap area (09/21/10):*

Visual Observations Log Form

Date	October 21, 2010	**Project Number:**	000029-02 BG-27 Task 4
Location:	NW Natural "Gasco" Site		
Project Name:	NW Natural – Gasco		
Monitoring Period:	Monthly(Year 4) – October 2010		
Time Observations Started:	Oct. 21, 2010 @ 13:15	**Time Observation Concluded:**	Oct. 21, 2010 @ 14:45
Weather Conditions:	Mostly Cloudy, 60s° Fahrenheit, winds calm		
Wave Action Observations:	Very light wave action (0.0 – 0.2 feet in height)		
Photographs Taken:	(Yes) No		

Tidal Conditions:	Willamette River level on 10/21/10 ranged from 0.97 to 4.46 feet. The Willamette River level during photos is approximately 1.13 feet measured at 13:45 (River Level Datum: Morrison Gage Height).
Observations of Erosion/Deposition:	No erosion/deposition is evident along the shoreline. All visible organo-clay mat material segments are out of the water. One exposed section of organo-clay mat is visible at the upriver extent of the cap area is approximately 15 feet long and 2 at the water's edge. Two exposed sections of exposed organo-clay mat are visible near the midpoint, head of the cap area, one 4 foot in length, the other about 2 feet. The last exposed mat is near the downriver side, 4 feet from the shoreline, approximately 30 feet long. (Photo 1).
Observations of Long-term Controls (i.e., oil booms, organo-clay mat, etc.)	The Fuel and Marine Marketing (FAMM) containment boom is positioned across the cap area, between the upriver corner of the ship dock and the wooden dolphin (near the upriver extent of the site and near the Siltronic Corporation outfall). Buoys that identify the cap area to mariners are in place as installed. The position of the FAMM oil boom, warning buoys and a general overview of the site shoreline are shown in Photo 2.

Other Comments:
No sheen is evident in or around the cap area. Photo 3 shows the water surface and shoreline immediately downriver of the sediment cap.

Recorded by: Douglas Laffoon

Photo 1 — *Exposed section of organo-clay mat 15 feet long extends to the river's edge at the upriver extent of cap (10/21/10):*

Photo 2 — *FAMM oil boom and mariner warning buoys in place across pilot cap area (10/21/10):*

Photo 3 — *Conditions immediately downriver of cap area (10/21/10):*

Visual Observations Log Form

Date	November 22, 2010	**Project Number:**	000029-02 BG-27 Task 4
Location:	NW Natural "Gasco" Site		
Project Name:	NW Natural – Gasco		
Monitoring Period:	Monthly(Year 4) – November 2010		
Time Observations Started:	Nov. 22, 2010@ 13:30	**Time Observation Concluded:**	Nov. 22, 2010 @ 15:00
Weather Conditions:	Rain, 39^{o} Fahrenheit, winds light from SE		
Wave Action Observations:	Light wave action (0.1 – 0.3 feet in height)		
Photographs Taken:	(Yes)	No	

Tidal Conditions:	Willamette River level on 11/22/10 ranged from 4.22 to 7.14 feet. The Willamette River level during photos is approximately 4.46 feet measured at 14:00 (River Level Datum: Morrison Gage Height).
Observations of Erosion/Deposition:	No erosion/deposition is evident along the shoreline. The visible organo-clay mat segments are partially submerged. Approximately 3 feet of organo-clay mat is visible at the upriver extent of the cap. One exposed section of exposed organo-clay mat measuring 4 foot in length is visible approximately 2 feet from the river's edge. The last exposed organoclay mat is approximately 20 feet long located near the downriver extent of the cap, and submerged in approximately1.5 feet of water,. (Photo 1).
Observations of Long-term Controls (i.e., oil booms, organo-clay mat, etc.)	The Fuel and Marine Marketing (FAMM) containment boom is positioned across the cap area, between the upriver corner of the ship dock and the wooden dolphin (near the upriver extent of the site and near the Siltronic Corporation outfall). Buoys that identify the cap area to mariners are in place as installed. The position of the FAMM oil boom, warning buoys and a general overview of the site shoreline is shown in Photo 2.

Other Comments:
No sheen is evident in or around the cap area. Photo 3 shows the water surface and shoreline immediately downriver of the sediment cap.

Recorded by: Douglas Laffoon

Photo 1 — *Visible section of organo-clay mat 20 feet long in 1.5 feet of water on the downriver end of cap (11/22/10):*

Photo 2 — *FAMM oil boom and mariner warning buoys in place across pilot cap area (11/22/10):*

Photo 3 — *Conditions immediately downriver of cap area (11/22/10):*

Visual Observations Log Form

Date	December 20, 2010	**Project Number:**	000029-02 BG-27 Task 4
Location:	NW Natural "Gasco" Site		
Project Name:	NW Natural – Gasco		
Monitoring Period:	Monthly(Year 4) – December 2010		
Time Observations Started:	December 20, 2010 @ 14:00	**Time Observation Concluded:**	December 20, 2010 @ 16:00
Weather Conditions:	Cloudy, low 40s degrees Fahrenheit, 2-5 knot winds from the south		
Wave Action Observations:	Mid wave action (0.3-0.6 feet in height)		
Photographs Taken:	(Yes) No		

Tidal Conditions:	Willamette River level on 12/20/10 ranged from 8.20 to 6.60 feet. The Willamette River level during photos is approximately 7.71 feet measured at 15:00 (River Level Datum: Morrison Gage Height)
Observations of Erosion/Deposition:	No erosion/deposition is evident along the shoreline. Due to high river water levels, the exposed organo- clay mat material observed in preceding events was not visible (Photo 1).
Observations of Long-term Controls (i.e., oil booms, organo-clay mat, etc.)	The Fuel and Marine Marketing (FAMM) containment boom is positioned across the cap area, between the upriver corner of the ship dock and the wooden dolphin (near the upriver extent of the site and near the Siltronic Corporation outfall). Buoys that identify the cap area to mariners are in place as installed. The position of the FAMM oil boom, warning buoys and a general overview of the site shoreline are shown in Photo 2.

Other Comments:
No sheen is evident in or around the cap area. Photo 3 shows the water surface and shoreline immediately downriver of the sediment cap.

Recorded by: Douglas Laffoon

Photo 1 — *High river level shown above the extent of sediment cap (12/20/10):*

Photo 2 — *FAMM oil boom and mariner warning buoys in place across pilot cap area (12/20/10):*

Photo 3 — *Conditions immediately downriver of cap area (12/20/10):*